The skull is larger and proportionately longer than in *rupestris*, smaller than in *mantchuricus*, stouter and broader in the region of the nasals than in *colatus*.

Colour.—In summer the upper parts, including the tail, black or brownish black; chin, muzzle, and face greyish; lips, legs, feet, and flanks rufous; belly, chest, throat, and inner surface of fore legs white. Of the four specimens secured all showed this colouring, in one the upper parts being pure black and the rufous of the flanks and legs very bright. It may thus be argued that the black colouring in this form is a fixed character, and not recurring melanism, as in the Saghalin *rupestris*, in which there are sometimes red summer individuals, many pure black ones with only a little rufous about the ears, and a large number of individuals that are intermediate in colour. All specimens taken in the Tung Ling that I have heard of have been described as black. The winter pelage, judging from skins seen in Peking, appears to be pure dark grey.

Measurements of type:—

Head and body 235 mm.; tail 200; hind foot 62; ear 32.

Skull: greatest length 55; basilar length 42·5; length of true molar series 7.

Habitat. Wu-ling-shan, in the Tung Ling area, 75 miles N.E. of Peking, Chihli, N. China.

Type. A fully-adult female. U.S. Nat. Mus. no. 219185. Orig. no. 1033. Collected by A. de C. Sowerby on 25 Aug., 1917. Alt. 3500 feet.

Range. The range of this form appears to be restricted to the somewhat limited forested mountainous area known as the Tung Ling, formerly a hunting-preserve of the Imperial Manchu family.

PROCEEDINGS OF LEARNED SOCIETIES.

GEOLOGICAL SOCIETY.

December 15th, 1920.—Mr. R. D. Oldham, F.R.S., President, in the Chair.

The following communication was read:—

'Palæontology of the Tertiary Deposits in North-Western Peru.' By Henry Woods, M.A., F.R.S., T. Wayland Vaughan, Ph.D., J. A. Cushman, Ph.D., and Prof. Herbert Leader Hawkins, D.Sc., F.G.S.

The fauna of the Negritos Formation is of shallow-water character, and consists mainly of gasteropods and lamellibranchs,

with a small number of teeth of fishes, decapod crustacea, corals, and one Echinoid. *Aturia* is also present.

The number of species is large, and nearly all are new.

By the stages reached in the evolution of *Venericardia* of the *planicosta* group, correlation is made with the Tejon Group of California; but the relation to the Wilcox and Lower Claiborne Groups of the Eastern and Gulf States of America is more marked, and is sufficient to indicate the existence of a sea-connexion between the Pacific and the Atlantic. There are some interesting resemblances to the fauna of the European Eocene.

The Lobitos Formation is distinguished by the presence of foraminifera belonging to the genera *Lepidocyclina* and *Orthophragmina*. The mollusca in the lower part of the formation do not differ much from those in the beds beneath, though some of the species have undergone gradual change, with development of senile features.

In the Zorritos Formation, all the species are different from those of the Lobitos and Negritos Formations. Miocene age is indicated by the similarity of some of the gasteropods and lamellibranchs to those of the Miocene of Panama.

The mollusca and decapod crustacea are described by Mr. Woods; the corals by Dr. T. W. Vaughan; the foraminifera by Dr. J. A. Cushman; and an Echinoid by Prof. H. L. Hawkins.

January 5th, 1921.—Mr. R. D. Oldham, F.R.S., President, in the Chair.

The following communication was read:—

'The Lithological Succession of the Carboniferous Limestone (Avonian) in the Avon Section at Clifton, Bristol.' By Prof. Sidney Hugh Reynolds, M.A., Sc.D., F.G.S.

Although, in addition to the late Dr. Arthur Vaughan, a number of authors, including Stoddart and Mr. E. B. Wethered, have described some of the rocks of the classical Avon section, no detailed account has hitherto been written. Most of the rocks of the Avon section can, however, be paralleled among those described by Mr. E. E. L. Dixon from Gower, and the Author finds himself in close agreement with Mr. Dixon in regard to their conditions of accumulation. In particular, the three *Modiola* phases (calcareous-lagoon phases) of K_m, C_2–S_2, and the top of S_2 recognized by Mr. Dixon in Gower, are represented in the Avon section, and the only feature of general interest in relation to them that the Author's work emphasizes is their very constant association with calcareous algæ. Particular attention was paid to these organisms. The fact that the well-known 'Concretionary Beds' which form so marked a feature of the Upper S_2 Zone are largely algal in origin

is confirmed, the Cotham-Marble-like layers consisting of *Mitcheldeania* or *Spongiostroma*, the two forms being commonly associated. *Mitcheldeania* is the most persistent of the calcareous algæ, ranging from the extreme base of the section to the top of S_2. *Ortonella* is characteristic of the K Beds; *Solenopora* is also found in those beds. *Spongiostroma*, often associated with *Mitcheldeania*, is the prevalent organism in many of the calcite-mudstones of C_2 and S. *Girvanella* has been met with in D_1 and *Aphralysia* in C_2 and S. The '*Seminula*-pisolite' structure of Vaughan proves to be algal in origin.

Dolomitization is considerably more widespread in the Avon section than had previously been ascertained. There has been a little dolomitization at one or two levels in the K Beds, but it is not a characteristic feature of that horizon. The matrix of the crinoidal limestone which forms practically all the Z Beds is nearly everywhere dolomitized. The almost complete dolomitization of the Lower C_1 Zone (*Laminosa* Dolomite) and of C_2 (*Caninia* Dolomite) has long been familiar; but it has scarcely been recognized how widespread is dolomitization in the calcite-mudstones of S_1 and in the *Lithostrotion* Limestones of S_1 and S_2. Oolites tend to resist dolomitization. Mr. Dixon's conclusions regarding the Gower dolomites seem to be perfectly applicable to those of the Avon section; everything indicates that the main dolomites are 'contemporaneous'. Pseudobrecciation, as described from Gower by Mr. Dixon, is most characteristic of the foraminiferal limestones of the D Beds; but a novel feature is the recognition of an analogous recrystallization in sandy limestone from both D_1 and the Bryozoa Bed (K_1). It is suggested that a peculiar variety of calcite-mudstone may be due to recrystallization on a microscopic scale somewhat analogous to that of the pseudobreccias on a larger scale, except that in the calcite-mudstones it is the 'matrix' (not the 'fragments') which is recrystallized. The 'rubbly' limestones so characteristic of the D Beds are also probably related, and owe their origin to a concretionary and recrystallization process by which the lime gathered in the nodules, from which the iron and shaly material became separated.

Miss Chapman having published several chemical analyses, and Mr. E. B. Wethered having studied a number of insoluble residues, no further work on these lines was undertaken. The Avon succession is shown in a detailed vertical section appended to the paper.